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and arguments of the lecturer. For the further aid of the student, equations are given representing the various reactions described, and every reasonable detail of the operation is recorded. Not only for the student in the lecture room is the book valuable, but also for the many who have not the advantage of college demonstration and who are compelled to rely largely upon their own resources. For the convenience of such teachers as may not have ready access to books of reference, Mr. Newth has added in the form of an appendix a number of important and useful tables, thirty-four in all, not often found in the smaller works on chemistry.

C. P.

An Introduction to Qualitative Chemical Analysis by the Inductive Method. A Laboratory Manual for Colleges and High Schools. By DELOS FALL, M.S. Boston and New York, Leach, Shewell & Sanborn. 8°.

IN this age of text-books it is difficult to be original, and the most that our authors have aimed at is perfection and revision of arrangement. Mr. Delos Fall, M.S., Professor of Chemistry at Albion College, has, however, recently given to the student of chemistry a new manual of qualitative analysis decidedly unique in its character. As he asserts in his prefatory note, this manual is designed to impart but little chemical truth directly, aiming rather to lead the student to gain that truth himself as nearly as possible at first hand and as a product of his own thinking. A preliminary chapter intended for both the student and the instructor gives the general plan of the book and describes the method to be used. This consists essentially in leading questions calculated to bring the student on by his own research from the fundamental ideas of chemical theory to the more advanced practical application of his knowledge to systematic qualitative analysis.

The plan as described by the author is a combination of (1) original investigation and (2) reference to authorities. "In the beginning (1) will be a very small factor and (2) correspondingly

large. As experience in manipulation, observation, and interpretation increases (1) will increase and the necessary dependence on (2) will decrease. To the experienced chemist (1) is very large and (2) very small; in other words, he is his own authority." Under the guidance of an able instructor the book will be most valuable, and in such a case will, as the author has himself demonstrated, produce accurate, enthusiastic, and independent students.

C. P.

The Batrachians and Reptiles of the State of Indiana. By OLIVER P. HAY. Indianapolis, William P. Burford, Printer and Binder.

THE present work consists of a list of the reptiles and batrachians found in the State of Indiana, with a description of their characteristics and with analytical keys for the determination of species. The work describes 81 species in all, and is accompanied by a few plates illustrating the subject. The design of the author is to make a key which shall be usable by those who are not specialists, and he has therefore appended a glossary, explaining the use of all scientific terms, and his general method of treatment is such as to make the book intelligible even to a novice.

The Birds of Indiana. By AMOS W. BUTLER. From the Transactions of the Indiana Horticultural Society for 1890.

THIS little pamphlet consists simply of a list of the birds found in Indiana, either as residents or as temporary migrants. No characteristics of species are given, although a large number of illustrations are inserted, taken from Coues's "Key to North American Birds."

THE price of Dr. Sternberg's work on bacteriology, reviewed in *Science*, Feb. 24, should have been stated as \$8, cloth; and \$9, sheep; Wm. Wood & Co., New York, publishers.

Dyspepsia

Dr. T. H. Andrews, Jefferson Medical College, Philadelphia, says of **Horsford's Acid Phosphate.**

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For sale.—A complete set of the third series of the American Journal of Science (1870-1893) handsomely bound in single volumes in dark brown half morocco. Address G. H. Williams, 803 Cathedral Street, Baltimore, Md.

For sale, or for exchange for books on medicine or surgery, new editions only, a large geological library, containing nearly all the State and Government Reports since 1855. Will be pleased to answer letters of inquiry and give information. Address R. ELLSWORTH CALL, Louisville, Ky.

For exchange.—Slides of Indian Territory Loup Fork Tertiary Diatoms for other microscopic fossils. Address S. W. WILLISTON, Univ. of Kansas, Lawrence, Kans.

For exchange.—Will exchange an "Ideal" Microscope of R and J. Beck, London, 2 eye pieces 3 objectives, 3 inch, 1 inch, 1-6 inch; bull's eye condenser on stand, substage condenser, mechanical stage, etc., for any of the leading makes of type writers. Particulars by mail. DELOS FALL, Albion College, Albion, Mich.

Sale, or exchange for similar material; Diatoms (*Isthmia nervosa*), unmounted, from San Francisco Bay. M. J. ELROD, Bloomington, Ill.

For sale or exchange.—I have a few copies of my translation of "Strasburger's Manual of Vegetable Histology, 1887," now out of print, which I will send post-paid for \$3 or for one dozen good slides illustrating plant or animal structure. Address A. B. Hervey, St. Lawrence University, Canton, N. Y.

The undersigned has the following specimens to exchange for crystals of any eastern or foreign localities or Indian relics: tin ore, metacinnabarite, stibnite, garnierite, calenante, hanksite, ulexite, rubellite, lepidolite, blue and green onyx, Cal. pine-ite, aragonite on chalcodony, cinnabar, double refracting spar, clear and clouded, and others. J. R. Bush, care of General Delivery, Los Angeles, Cal.

For sale or exchange.—A private cabinet of about 200 species of fossils, well distributed geologically and geographically. Silurian, about 40; Devonian, about 50; Carboniferous, about 80; others, about 30. Frank S. Aby, State University, Iowa City, Ia.

Wants

WANTED—Second-hand copy Tryon's Systematic Conchology. Please quote condition, date, price. H. L. Osborn, Hamline University, St. Paul, Minn.

A COMPETENT TEACHER of botany in college or university is open to engagement. Address L., Box 86, Rochester, Mich.

CAN any one inform me as to the age to which cats have lived? I have one twenty years old. Edward D. Webb, 132 W. Eighty-first St., New York.

WANTED.—Second-hand. Foster's Physiology, Balfour's Comparative Embryology, Claus & Sedgwick's Zoology, Flower's Osteology of Mammalia, Vine's Physiology of Plants. Please state editions and prices asked and address Richard Lees Brampton, Ontario, Canada

WANTED.—American Journal of Conchology, seven volumes. Parties having these for sale will please address the undersigned, stating condition and price. R. Ellsworth Call, Louisville, Ky.

A GRADUATE ENGINEER will give instruction evenings in geometry, trigonometry and surveying, mechanics, physics, mechanical drawing and general engineering construction. Five years' experience in field and editorial work on engineering journal. References furnished. C. S. H., 102 Tribune Building, New York.

WANTED.—By well-qualified and experienced science master and associate of the Royal School of Mines, London, aged 26 (at present in England), a mastership in technical college or university for any of the following subjects: Engineering sciences, geology and mineralogy, physics, chemistry and metallurgy, etc., etc. Can provide excellent references and credentials. Apply, J. G., 17 Sussex St., Rochdale, England.

A GRADUATE of the University of Pennsylvania and a practical mineralogist of twenty years' experience desires to give his services and a cabinet of 25,000 specimens, all named, with about the same number of duplicates, in minerals, crystals, rocks, gems, fossils, shells, archaeological and ethnological specimens and woods to any institution desiring a fine outfit for study. The owner will increase the cabinet to 50,000 specimens in two years and will act as curator. Correspondence solicited from any scientific institution. J. W. HORTER, M.D., Ph.D., San Francisco, Cal., General P. O. Delivery.